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ABSTRACT

An investigation was made of research and development needs among various academic and administrative divisions in New York City Community College. Although the primary aim of the investigation was to obtain information related to current research needs in the college, the study was also designed to accumulate information pertaining to the previous history of institutional research and development and structural conditions for future research and planning activities. The preponderance of information obtained in the study was from sources within the college such as management personnel, department chairmen, faculty, and in some instances students. Information was also obtained from the Tri-State Planning Commission on the socioeconomic composition of the community in which the college is situated, in order to establish guidelines for the future development of New York City Community College. This study revealed that the major thrust of research and development activities should be one of analysis of the effectiveness of educational programs and services. The purpose of the master plan, a description of the college, and the methodology used for developing the plan are presented, followed by the master plan for educational research and development. Means for operationalizing the master plan are also proposed. (Author/AH)

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MASTER PLAN FOR EDUCATIONAL RESEARCH AND DEVELOPMENT

New York City Community College

by

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SECTION ONE

Introduction

It is now a matter of tradition that the community-junior college is to be described as "democracy's college." The public relations thrust--what formerly was an attempt to ward off public criticism of the institution as "an extension of the high school" or "a junior member of the higher education fraternity"--has now become an attempt to maintain the status of the community college as the most striking recent structural development in American higher education. Simply put, the phenomenal growth of the two-year college has produced a milieu for education that is capable of attracting legions of "forgotten" students to campus. The community college has come to be recognized by those who use it as a "hands-on" insitution for social and economic mobility; as an institution that is able to provide educational services and programs on an "as need" basis where none existed before; as an institution that can influence community needs through its status as an agency of community renewal; and, finally as an institution that is the key setting for higher education in a society that has committed itself, at least philosophically, to the ideal of universal higher education.

Undoubtedly these statements have a familiar ring. The literature is full of theses, journal articles, unpublished

reports, books, and institutional accounts concerned with the community college as an educational force. Each of these publications has its own intended audience, but when considered in tandem with other forms of literature, the result is disheartening. The literature rarely addresses itself to encompassing concepts in community college education.

The community college is in the unenviable position of being an institution about which little of substance is written. Answers are needed to important questions related to qualitative aspects of the impact of college but they are not forthcoming. What, for example, are the effects of translating outdated philosophical ideals into current policy and practice? What is the concept of the community college and how has it been shaped by community value systems? Does the college experience account for changes in student behavior and attitudes? Is the community college really an "open door" college or is it more of a "revolving door" institution? What happens to students when they terminate their education? Do they find meaningful employment? Do they perform well on the job? How many students transfer to senior institutions and how well do they perform? What is the educational mission of the two-year college? Is its primary purpose to salvage, to redirect, or to maintain custody over its students? What types of perceptions do students have of college? If the perception is one of discontent or apathy

is it because many of the educational programs and services offered by the community college are perceived by students as being irrelevant to their needs? What can be done to further the impact of college on students? Should the community college be a microcosm of the community? These questions are rarely examined in depth by two-year college faculty and administrators.

The lack of significant reasearch within the profession has led to acute debilities. A most obvious problem, is that by leaving the field of institutional assessment untouched, community college educators have allowed others--legislators, journalists, laymen, and the like--to define for them the manner in which they should conduct institutional affairs. Moreover, the directions taken by individual colleges remain indeterminate when critical questions are swept aside by administrators who place primary emphasis on the collection of information related to numerical indicators of institutional size. Data of this type are concrete and easily manipulated; so easily manipulated, in fact, that administrators have come to believe that information related to size of enrollment, sources of revenue, square footage of facilities, credentialing of faculty, number and type of management units, etc., is representative of the full role and scope of educational research. It is true that many educators would argue that quantitative data are the only kind of data that have meaning in

complex organizations. These data, however, cannot be used to represent substantive concerns in the community college. New techniques will be required to measure educational phenomena such as institutional impact, the values and attitudes of students, institutional responsiveness to community needs, the quality of institutional goals (and structures developed to meet these goals), instructional effectiveness, and other concerns that relate to college structure and function. It is the role of educational research to measure the impact of these phenomena and to convert the results into a plan for institutional development. This is a task that cannot be undertaken in a vacuum.

The single most important function of management personnel in the community college is one of the facilitation of institutional goal attainment--the measurable output of higher education. If faculty and administrators lose sight of this function, then the educational mission of the community college is lost. This unique institution can ill afford to sacrifice quality in educational programs in favor of considerations related to tradition and political expedience. There will be a need for statesmanship of the highest order to bring faculty and administrators into contact with changing urban and social conditions; conditions which may even suggest a need for revision of original mission and scope. It is with this precept in mind that a master plan for educational research and development is proposed for New York City Community College.

SECTION TWO

Purpose of the Master Plan

There are a number of different approaches that can be used to evaluate outputs in higher education. One approach focuses upon the effect of selected student and institutional characteristics on educational outcomes in the community college. The primary purpose of the master plan is to present a model for evaluation of educational outcomes in one institution, New York City Community College, and to review these outcomes in context with the resources--past, present, and future--that are necessary to achieve institutional goals.

A master plan is essentially meaningless unless it contains a research design for obtaining information that can be used to predict future instructional, financial, staff, and spatial needs of the college. The provision of a research design for this activity is a second purpose of the master plan.

Finally, and perhaps most important, the plan is an attempt to establish guidelines that can be followed to obtain baseline data pertaining to current and future social trends in the regional community. Knowledge of social trends is important to community college faculty and administrators because these trends inevitably interact to shape the college of the future. A college that is not aware of its place in

the community cannot lead itself, let alone the community. To be worthy of the name "community college", an educational institution must engage in continual interpretation of its role--hence the need for a master plan.

SECTION THREE

The College

This plan for research and development is not keyed to consideration of traditional public relations and tautological aspects of research in higher education. Instead, it is a prospectus for planning, research, and evaluation that is based on a paradigm model of institutional structure and functioning. The plan is developed in such form that it can be adopted for immediate use in any community college but the primary institution, of course, is New York City Community College.

New York City Community College is a publicly supported community college of the City University of New York in the program of the State University of New York. The college was born of a desire to create a two-year urban institution that would educate high school graduates in technical programs not offered at traditional four-year colleges. The college currently serves 18,080 regular students, of which 9,571 are full-time, and 8,509 are part-time. The full-time equivalence is 13,120 students, all of whom are served through two campuses--one located in Brooklyn and the other in Manhattan.

Students pursuing credit and non-credit curriculum programs in the college enter through a variety of programs (i.e., University Applications Processing Center, "Open Admissions," direct application to college, etc.) and ori-

ginate from the five boroughs of New York City (Bronx, Manhattan, Brooklyn, Richmond, and Queens), the New York Metropolitan area, several outlying states, and a number of foreign countries. They are evenly divided according to sex with 9,527 male and 8,553 female students enrolled for fall semester 1974. Non-credit programs are also offered at a number of off-campus centers; during the 1974-1975 academic year it is expected that approximately 50,000 students will participate in off-campus educational, social, and cultural activities sponsored by the college.

Founded in 1946 by the State of New York as a technical institute, New York City Community College has developed into one of the leading community colleges in the United States in terms of its enrollment and its occupational education programs. The college offers the Associate in Applied Science, the Associate in Arts, and the Associate in Science degrees in programs sponsored by four divisions: Commerce, Liberal Arts, Science and Health Services, and Technology. Professional accreditation is required in five programs: Dental Hygiene, Nursing, X-Ray Technology, Medical Laboratory Technology, and Ophthalmic Dispensing. Other programs offered by the college are:

Accountancy
Automotive Technology
Child Care-Early Childhood Education
Data Processing
Design Drafting
Electromechanical Technology
Lithographic Offset
Marketing
Medical Laboratory Technology
Ophthalmic Dispensing
Secretarial Science
Architectural Technology
Chemistry
Civil Technology
Construction Technology
Dental Hygiene
Education Associate
Environmental Sciences Technology
Mechanical Technology
Nursing
Radiologic Technology

The faculty of New York City Community College consists of 98 full professors, 91 associate professors, 267 assistant professors, 98 instructors, 51 lecturers, and 1032 adjunct staff for a total of 1,637 faculty. The average teaching load per semester is fifteen hours; this figure, however, may be reduced by service allocations such as division or department administration, special projects, and general administration. The agency for collective bargaining in the college is the Professional Staff Congress.

In 1953, the college was renamed New York City Community College of Applied Arts and Sciences, the sponsorship going to the Board of Estimate of New York City. In 1964, the college was transferred to the City University of New York, administered by the Board of Higher Education. This transfer is reflected in the operating budget of the college as approximately 60 per cent of the total $27,529,000 budget is derived from city funds while the remaining 40 per cent is derived from state funds. Student fees (which off-set to the budget) account for $2.5 million annually and awards to the college from grant sources amounted to $1,274,900 during the 1973-1974 academic year.

The value of the physical plant (in land improvement of all campuses) is $55 million. A total of 1.1 million gross square feet is available in facilities that are divided as follows: 16 per cent classrooms, 33 per cent laboratories, 9 per cent study, 23 per cent offices, and 19 per cent miscellaneous. The facilities master plan was completed by

the master plan architect in 1971 and calls for construction to begin in May of 1975 with completion scheduled for September 1978. This plan will add to the recently completed eight-story Allied Health Laboratory Building, a renovated six-story Commerce Building, and a new eleven-story office and classroom building. The existing plant is also comprised of a two-story Auditorium and Gymnasium building which, when combined with other facilities will unite the plant into a unified campus structure on 3.49 acres or land in the Borough Hall section of Brooklyn. In July 1971, the college acquired the educational program, assets and liabilities of the 90 year old Voorhees Technical Institute. Now known as the Voorhees Campus of New York City Community College, this acquisition has resulted in an expansion of career and technical programs within an otherwise tight budget.

SECTION FOUR

Methodology

Methods of educational research have been applied by community college educators to every important institution in American society but their own. There is a solid base of fact finding research on the community as a social institution, another on the business enterprise, much research on governmental and political organizations, but virtually nothing on the educational enterprise.

This vacuum exists in New York City Community College. Aside from routine accreditation and general statistical studies of the college, most of the educational programs in the institution have not been based on empirical data. There have been many studies of pedagogical matters--class size, aptitude testing, student achievement, faculty profiles, student follow-up, and the like--but in these the forms of academic organization have been taken for granted. There also have been many studies of educational and administrative problems of the college, but these usually stop short of useful generalization, and are usually held as confidential and not for publication.

In this section, the questions that need to be answered in a master plan for educational research and development are considered and the methodology used in formulating the master

plan is reviewed. The baseline assumption is that all academic and administrative staff at New York City Community College are aware of basic research and development needs of the college. Since this assumption, however, has already proven to be inaccurate, it is appropriate to approach the subject in as naive a way as possible, trusting the data from exploratory interviews to lead to greater sophistication.

There are ten specific questions that need to be considered in the master plan:

1) What are the research and development needs of the college and how adequately have these needs been treated in the past?

2) How are research and development needs divided according to structural and functional properties of the college? (i.e., what research needs relate to functional problems in college administration and what needs relate to structural components of college organization).

3) What priority levels (primary, secondary, or tertiary) should be assigned to various research and development needs and what is the basis for assignment of priorities?

4) What unit(s) of analysis in the college are represented by various research and development problems? (i.e., which unit(s) in organizational structure shall be the subject of the research program and what are the procedures to be used in research)

5) Are substantive relationships apparent among research and development needs such that a master plan can be developed that gives due representation to the entire college?

6) What types of research methodologies and design are appropriate for the problems at hand and the institution in question?

7) What resources are available to address various research and development needs in New York City Community College?

8) What is the political setting in the college for translation of research findings into a program of action?

9) How can structural and functional elements of New York City Community College be modified accentuated, or moderated to maximize the opportunity for translation of research findings into an action program?

10) What types of follow-up research and development activities will be necessary to insure that the college has met its organizational goals and, in fact, has implemented programs of corrective action to insure attainment of desired educational outcomes?

Many subjects were interviewed in order to derive a master plan. These subjects were the president, deans, associate division and staff deans, assistant deans, directors, faculty, and selected administrators on the central staff of the City University of New York. After consultation with the President and the Dean of the College, a decision was made to use a seven-step procedure for development of the master plan:

1) review of previous research reports and institutional statistics

2) review of published institutional handbooks, regulations, policies, procedures, and organizational charts

3) In-depth interviews with members of middle and executive levels of management in the college

4) corraborative interviews with selected central office staff of the City University of New York

5) participant observation in meetings with numerous academic and administrative staff of the college

6) follow-up interviews with various staff members

7) review of comparative national data

The input - output diagram in Figure 1 depicts the elements of the study, each of which is described below.

Inputs

Review of Previous Research Reports

A review was made of the content of recent studies conducted by or for the faculty and administration of New York City Community College. Additionally, summaries of institutional statistics over the past three years were reviewed and appropriate notations were recorded with regard to institutional development in terms of data related to enrollment, finances, facilities, manpower, community demography, and local and state politics.

Review of Published Institutional Materials

Numerous institutional materials pertaining to policies, regulations, and organizational structure were reviewed in context with statistical summaries of the college. The purpose of this review was to develop an understanding of organizational structure and the ways in which policies and regulations are used to reinforce the structure. Presumptions were established, critical problem areas were identified, and cross-cutting functions in the organization were pinpointed.

In-depth Interviews with Staff

Interviews were conducted with twenty-seven executive-level, mid-level and support-level administrators in order to identify major research problems that require attention. The individuals interviewed and their reporting relationships are as follows:

Office of the President
Herbert Sussman, President
Richard Greenfield, Executive Assistant to the President
Victor Timoner, Assistant to the President, Public Information

Office of the Dean of the College
Peter Caffrey, Dean of the College

Office of the Dean of Faculty
Mario Iraggi, Dean of the Faculty
Frederick Klanit, Associate Dean of Faculty
Margaret Martin Squiccimarro, Associate Dean of Faculty
Judith Bronstein, Assistant to the Dean of Faculty
August Tuosto, Associate Dean, Division of Allied Health and Natural Sciences
Harry Dunbar, Associate Dean, Division of Liberal Arts
Rosalind Solon, Associate Dean, Division of Commerce
Carl High, Assistant Dean - Open Admissions

Office of the Dean of Students
Melva Wade, Dean of Students
Robert Feinstein, Assistant Dean of Students
Evelyn Whitaker, Assistant Dean of Students
John Hudesman, Counselor
Ruth Lebovitz, Counselor

Office of the Dean of Administration
Luther Johnson, Dean of Administration
Fred Gruel, Acting Business Manager
Lyn Helfand, Assistant to the Business Manager
Peggy Ogden, Director of Personnel

Office of Continuing Education
Victor Lauter, Dean of Continuing Education
Beverly LaPuma, Coordinator of Tuition Courses

Office of the Dean of Voorhees Campus
George M. Halpern, Dean of the Voorhees Campus
George Muth, Assistant to the Dean of the Voorhees Campus

Computer Center
Ernest O'Dierno, Director of the Computer Center

Office of Instructional Operations
Wilma Needleman

Corroborative Interviews

Several administrators on the central staff of the City University of New York were interviewed in order to further identify and clarify prerequisites for research and development in New York City Community College. This process was not used as a means by which to check on the validity or reliability of research needs as articulated by college administrators, but instead was used to further refine and expand the list of research needs already identified.

Participant Observation in Meetings

Routine involvement in a number of administrative and faculty meetings in the college provided a significant amount

of useful information in the identification of research and development needs. Whatever difficulties that occurred in identifying research needs during the course of the interviews, were alleviated through discussion in the context of the small group. As a result of numerous meetings, it was possible to observe functional relationships between offices within the college. In addition, numerous reports received and reviewed from specific offices provided detailed information pertaining to the instructional functions of various units within the college.

Follow-up Interviews

Follow-up interviews were conducted with six members of the professional staff to further define and clarify functional needs related to educational research and development. These interviews were enormously helpful in providing information pertaining to political aspects of the college organizational structure which need to be considered before a successful program of research can be implemented.

Review of Comparative National Data

Based on extensive consulting experience in multi-unit and single-unit community colleges in the United States, a national base of information was brought to bear on research needs in New York City Community College. Outside literature was also researched for information on research and development strategies appropriate for a complex urban community college.

The product of these activities was the development of a master plan for research and development in New York City Community College. Three primary sources of information were used in this phase of the methodology: the in-depth interviews, the participation in meetings, and the review of comparative national data.

User needs in the area of research and development were classified into six categories according to function and structure in the educational process. These categories were: students, instruction, community, manpower, finance, and facilities. Information elicited through the interviews was

then used to rank the research needs in terms of priority considerations (primary, secondary, or tertiary) for the 1974-1975 academic year. If a particular research need was identified by the majority (50 percent or more) of respondents within the institution, a "primary" rating was established for this need. "Secondary" and "tertiary" ratings were assigned to remaining research needs which were identified by less than half of the respondents as having a priority consideration for the current academic year; a rating of "secondary" was given to research needs which were identified by one quarter to one-half of college personnel as being of major concern and a rating of "tertiary" was assigned to all other needs (i.e., those needs which were identified as "important" by less than 25 percent of college personnel). This matrix was then evaluated with due consideration to all internal and external observations, and a master plan compiled which was representative of research and development needs in New York City Community College.

The advantage of the "open-end" or narrative interview is that it does not force respondents to categorize information into an irrelevant frame of reference, it allows unforseen events and attitudes to be reported just as thoroughly as those which are anticipated by the interviewer. The primary disadvantage, of course, is that collection of information in this fashion does not lend itself to easy quantification. The master plan, therefore, contains a number of

items which call for additional numerical data. Items of this type (i.e., enrollment, revenues, manpower, facilities, etc.) must be converted from qualitative form into quantitative measures. This is the objective of the master plan which is presented in the sections that follow.

SECTION FIVE

The Master Plan: A Role and Scope Definition

There is evidence that educational researchers in the community college are now beginning to direct their attention to the need for empirical information related to characteristics of college that derive from its relationship to community and legislative agencies. Programs of research are being initiated that key on the concept of "outputs" in the educational process--what are called measures of productivity in higher education. This development is clearly evident in the confluence of new accountability measures that have been initiated by agencies of community, state, and federal government. By necessity, it is also a major concern in the master plan since academic and administrative divisions within New York City Community College are accountable, when all is said and done, to the City of New York as well as to the State University of New York.

The fundamental premise underlying the master plan is that all research and development activities in the community college should relate to three central questions:

1) What type(s) of impact did the college have on its students and the community?

2) How much did it cost (i.e., manpower, facilities, and finance) to create this level of impact?

3) What type(s) of impact will be necessary in the future and what will be the cost to the college?

With the increased emphasis on accountability, it is desirable to measure institutional performance in terms of structural outputs generated by organizational divisions in the community college. Measurable outputs, for example, such as credit hours of instruction, unit cost per FTE, graduating students, and revenue per FTE, make up a statistical index of gross institutional performance in the educational process. They do not, however, cover the broad range of functional outputs that occur in the community college. A close look at institutional goal statements and philosophical platforms developed by individual colleges reveals the total number of functional objectives that can be pursued by any one institution.

Functional objectives transcend in importance structural outputs as units of measurement in higher education. If far-reaching programs of research and development are to be implemented, the task should be one of determining whether or not, and in what ways, the college has met its goals. Simply put, the concern of educational research in the community college should not be one of measuring structural outputs (i.e., "what division, department, or individual failed to meet intended institutional goals?") but should be one of examining functional outcomes in the educational process (i.e., "what types of outputs did the college as a whole generate?" and how well did these outputs satisfy institutional goals?").

To accomplish this task, a model for research will need to be developed that can systematically integrate structural and functional elements in the community college into a master plan for evaluation of institutional outputs. This model, by necessity, will need to reflect cognizance of institutional goals and objectives as well as various political processes inherent in organizational structure. This can best be done through development of a methodological design for research which is based on controlled investigation of a wide variety of institutional and student characteristics and the impact of these characteristics on educational outcomes in the college.

Astin and his associates have developed a model for research on college impact that seems appropriate for New York City Community College. In this model -- what may be termed a "paradigm" model of college impact -- the background characteristics of entering students and value orientations of the college and community are considered as "input" variables (see Figure I). Included in this input, of course, are the entering or initial scores of students on the particular variables under consideration -- the characteristics on which the college is presumed to have impact. An "expected" output (theoretically at any time after students enter college) based on these input characteristics can be computed and the effect statistically removed from students' "observed" output (their actual scores as matriculated students on the variable or variables under investigation) producing a residual

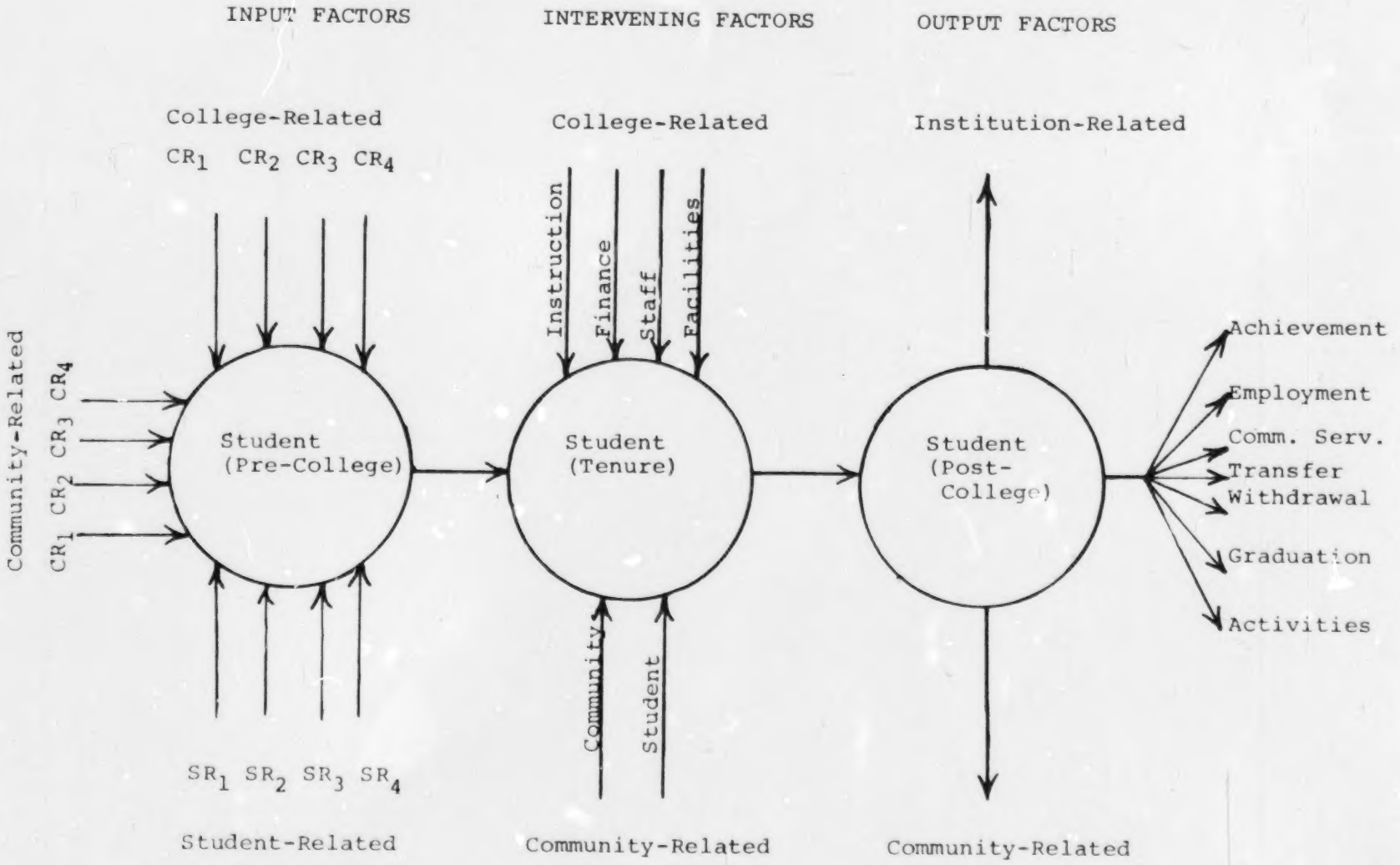

Figure 1. Input - Output Model for Educational Research and Development

output which is independent of input characteristics. Measures of the characteristics of the college and the community can then be related to this residual output to determine the extent to which they explain variation in the output beyond that explained by the input characteristics. This process culminates in the formulation of output measures which describe college impact in terms of change in student attitudes and behavior as well as institutional and community conditions which lead to impact.

The research needs articulated by faculty and administrative personnel in New York City Community College readily fit into this model. Functional information in the form of interview summaries, written accounts of meetings, and college publications evidenced a score of research needs that ranged from data on characteristics of entering students to unit cost information on general education and occupational programs. These needs were reviewed in context with institutional programs and services and are compiled as follows:

I. Primary Research Needs (50-100 percent concensus)

A. Students

1) student characteristics information:
basic classification
demographic
intellective
perceptual-attitudinal

2) attrition:
withdrawal from college (between semester)
withdrawal from courses (within semester)
stopout

3) student follow-up:
   - transfer
   - graduation
   - employment
   - withdrawal
   - stopout

4) college impact:
   - personal
   - social
   - career
   - community
   - economic

5) student perceptions of college characteristics:
   - organizational structure
   - academic preparation
   - social environment
   - counseling and guidance
   - technical preparation
   - preparation for society

6) student achievement:
   - curriculum (semester)
   - courses (semester
   - overall GPA (semester)

7) enrollment:
   - headcount
   - FTE
   - composition
   - day/evening
   - part-time/full-time
   - matriculation/non-matriculation
   - residence
   - curriculum
   - credit hour averages
   - enrollment trends
   - between-semester comparisons
   - within-semester attrition

8) enrollment projections:
   - college-wide
   - day/evening
   - part-time/full-time
   - headcount
   - FTE
   - curriculum program
   - continuing education

9) high school origin of students

10) high school articulation:
    educational needs of regional students
    activity needs
    cooperative programs
    career interests

B. Instruction

1) curriculum effectiveness:
    student outputs (attrition)
    grade distributions
    student perceptions
    certification scores

2) developmental studies/diagnosis, placement, and follow-up:
    reading
    English
    math
    science

C. Community

1) community needs assessment:
    business and industry
    civic organizations
    special interest groups
    community citizens

2) community perceptions of college characteristics:
    educational programs
    organizational characteristics
    facilities
    value of college to community

3) occupational market needs and curriculum offerings:
    existing programs vs. market need
    new program needs

D. Staff

1) faculty characteristics and workload distribution

2) projected revenues and staffing guidelines

3) governance structure and functions:
    institutional philosophy and goals

organizational structure
communication processes
organizational policy
organizational change
structural relationships within organization
relationship of institutional goals, structure, and output

E. Finance

1) cost center studies and trends operations
academic programs
administration
auxiliary services
capital projects

2) revenue/expenditure trends and projections

F. Facilities

1) facilities utilization trends and projections
classrooms
laboratoies
offices
day/evening

II. Secondary Research Needs (25-50 percent concensus)

A. Students

1) student flow in curriculum programs
day/evening
part-time/full-time
matriculation/non-matriculation

2) financial aid distribution
student need
trends
characteristics of student recipients
projected need

B. Instruction

1) evaluation of institutional needs in the Comparative Guidance Program
diagnoses of student needs
placement of students

2) cooperative programs of instruction and counseling

3) effectiveness of tutorial programs
   diagnoses of deficiencies
   placement
   performance in tutorial programs
   follow-up performance in sequential curricula

4) grading patterns
   historial
   current trends

5) open admissions
   characteristics of students
   student performance in curricula
   sequential achievement of students

6) faculty perceptions of student ability and capacity

7) counseling and student outcomes

C. Facilities

1) capital equipment needs
   life span of equipment
   surplus
   equipment needs

III. Tertiary Research Needs (25 percent concensus or less)

A. Students

1) analysis of transportation alternatives
   travel to campus
   demographic trends
   need for community learning centers

2) analysis of student orientation programs
   student needs in program
   program content and format
   corrective action

B. Instruction

1) analysis of multiphasic strategies of instruction
   cognitive learning
   behavioral objectives
   competency-based instruction
   modular instruction
   individualized learning

C. Staff

1) staff productivity
staff development programs

These research needs are clearly distributed into six functional areas -- students, instruction, community, staff, facilities, and finance -- which, when considered together, make up the management information system in New York City Community College. Each area or "data base" is represented in the input-output model in terms of its relationship to one of three variable categories (i.e., input variables, intervening variables, or output variables) or all three of the categories combined. For example, the student data base is generalizable to all variable categories because students bring with them to college certain background characteristics (input factors); they experience certain educational and social phenomena during college (intervening factors), and they enter into new relationships in the world of work and community affairs after leaving college (output factors). A similar sequence of relationships is characteristic of the community data base; the community is the sourcepoint of the student population, it is the primary power base for students while they are in college, and it is the recipient of the "finished product" after college.

A different relationship (to the input-output model) is characteristic of the instructional, staff, facilities, and finance data bases. The primary relationship of data elements

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in these categories is to the intervening factors in the model -- what may be called the ongoing conditions for impact in the community college. Students, for the most part, do not experience impacts of college outside of the campus environment. Moreover, impacts of the college experience diminish rapidly after termination of study and are little more than a matter of conjecture or expectation prior to inception of study. The importance of institutional resource variables (i.e.,variables in the instruction, manpower, facilities and finance data bases) in educational research, then, rests in their function as a determinant of the conditions for impact in the community college.

The primary research needs articulated above fit well within the "paradigm" model of educational research and development. All of the needs relate to one central concern: the measurement and maximization of impact in New York City Community College. Research on students, community belief systems, instructional outcomes and institutional resources is the means to this end.

SECTION SIX

Operationalizing the Master Plan

The present organization of the college, while functional for some purposes, does not permit optimal use of college administrative personnel in the achievement of institutional goals. The master plan for research and development can be expected to utilize the full-range of professional talent available in the college to address the following issues:

1. Common understandings of college function and structure

There is a pervasive feeling on the part of faculty, students and administrators that they do not know what is happening in all areas of the college. Agreement has not been reached on procedures to be used in reporting institutional characteristics data, each division developing its own interpretation of various report definitions. A systems approach to institutional reporting is necessary; the product of the system would be the common understanding of educational programs and services within the college.

2. A common data base for institutional decisions

Valid educational research relies on common definitions being applied to various productivity measures such as graduates; full-time equivalent students; faculty; student credit hours; etc. The master plan will organize data collection activities between faculty and administrators such that a common definitional framework will be in effect among all subgroups in the college.

3. Consensual agreement on institutional objectives

Processes of resource allocation can only be smoothly achieved when elements of the college decision-making apparatus agree on common objectives. Common objectives can be achieved when the total college community is aware of these objectives and has a chance to react critically to them. The master

plan will provide the foundation for this activity.

4. Effective long - range educational planning

Any movement of the college toward coping with future realities depends on adequate planning. An available data base, common objectives and definitions, financial projections, manpower projections and assessments, facilities planning, educational research and evaluation are all elements of this planning process. The master plan will outline technical support elements of the planning process.

5. Coordination of academic, facilities, and finance information

Physical planning requires academic and financial planning. The reverse is also true; effective academic planning will need to take into account the environment in which educational processes take place and the resources available. The master plan will produce projections of future program needs through management information data, manpower studies, and projections of client use.

6. Overview of outcomes in the instructional process

Various instructional strategies in use at New York City Community College need to be analyzed using evaluation designs which attempt to determine which procedures are most effective for the student body and the faculty. This will involve determination of how departments teach courses, how they employ different techniques in reaching course objectives, and systematic comparison of the effectiveness of these strategies. Using achievement and productivity models, the master plan will account for a systematic overview of the instructional process.

7. Knowledge of manpower trends in the college and community

Manpower needs in the college and community need to be identified (using training and experience variables) and the data made available to academic and administrative divisions within the college. If meaningful educational decisions are to be made, information will be necessary on manpower and market needs. A college without information of this type is without a foundation for its educational program.

8. Knowledge of demographic and community trends

If the college is to offer meaningful educational programs to its clientele, it will be necessary to collect information pertaining to demographic and community trends. Such trends as in-migration, out-migration, transportation, work location, etc., need to be summarized and analyzed to determine how well the college's programs are suited to community needs and expectations.

9. Understanding of procedures and processes in management functioning

Periodic reviews of all areas of administration in the college need to be made if faculty and administrators are to fully understand the functions of management in the educational process. Detailed analyses of the effectiveness of organizational structure involves determination of where overlapping activities occur, where inefficient reporting procedures are employed, where conflicts arise from unclarified responsibilities, and a host of other considerations related to management structure and function.

There are a number of staff competencies that will be necessary in the office of research and development if the college is to successfully address these issues. Perhaps some of the major competencies are the following:

Ability to design and carry out educational research and evaluation studies in higher education curricula

Knowledge of current trends in programs of student development and capacity to design and conduct evaluation studies in this area

Understanding of the relationship of community structure and demography to college structure

Knowledge of research strategies and techniques that can be used in evaluation of general education, occupational education and community education programs

Knowledge of management information systems, budget procedures, and fiscal planning

Knowledge of facilities planning

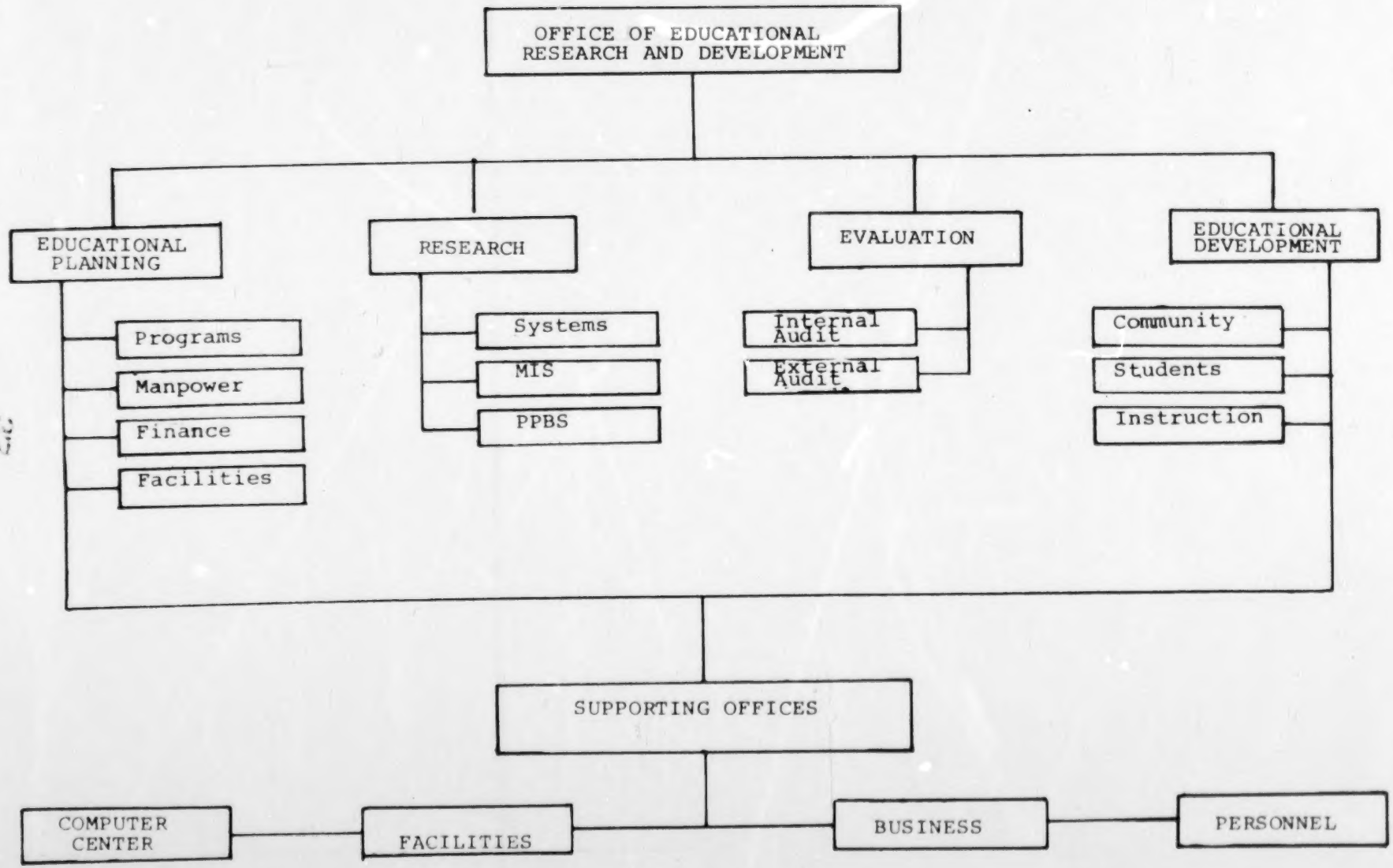
Ability to interpret facilities programs, construction programs, and facilities utilization patterns

Knowledge of data processing procedures and systems

Ability to conduct long-range planning studies and to design educational specifications for college development

The office of educational research and development will be divided into four functional areas: educational planning, research, evaluation, and educational development. These areas (see Figure 2) are compatible with the current management structure of New York City Community College; the college is organized into two basic management divisions -- support services and planning and development -- with most personnel having responsibility in one, but not both, divisions. Since the college operates with both academic and administrative divisions collecting and distributing information regarding college operations, it is felt that a "consortium" approach to educational research and development is necessary. This approach, while it is essentially dependent upon existing offices for data collection and tabulation, will serve to integrate and marshal the resources of the vast number of offices in the college concerned with information on students, instruction, community, staff, facilities, and finance.

Figure 2- Functional Chart of Organizational Structure for Educational Research and Development



In centralizing responsibility for data manipulation, and dissemination in one office, a major step will have been taken to insure accuracy of information related to the college. Research, evaluation, and planning in academic programs is all too often done in a haphazard fashion. Presently, administrative and academic divisions within the college conduct their own programs of research and evaluation. Many of these programs are concurrent and duplicatory and could be better implemented if all research and development activities were coordinated through one office. In the absence of a clear-cut definition of staff responsibility for research and development, personnel within the college have monitored college processes and procedures rather than evaluating outcomes in the educational process. It is the function of the Office of Educational Research and Development to determine major planning, development, research, and evaluation prerequisites necessary for effective management of the college and to administer these prerequisites in such a way as to minimize the management structure and maximize effective responsible operation.

SECTION SEVEN

SUMMARY AND CONCLUSIONS

An investigation was made of research and development needs among various academic and administrative divisions in New York City Community College. Although the primary aim of the investigation was to obtain information related to current research needs in the college, the study was also designed to accumulate information pertaining to the previous history of institutional research and development and structural conditions for future research and planning activities. The majority of information obtained in the study was from sources within the college such as management personnel, department chairmen, faculty, and in some instances students. Information was also obtained from Tri-State Planning Commission on the socio-economic composition of the community in which the college is situated -- the purpose being to establish guidelines for the future development of New York City Community College.

It is important to recognize that a multi-unit community college in an urban setting is a very unique institution. Among the characteristics that set New York City Community College apart from many other two-year and four-year institutions are the following: 1) the open admissions policy of the City University of New York which guarantees any high school graduate the opportunity to obtain a college education

2) the complex environment for education that is created by an urban-based community college in which many students enter college with learning disabilities; and 3) the existence of a comprehensive and costly curriculum which is made up of programs in general education, occupational education, and community education. These characteristics make the college an extremely complex institution in terms of its enrollment distribution in the "traditional" setting for higher education that is known as the City University of New York. It is important, therefore, to succinctly identify the educational goals and objectives of New York City Community College in a master plan for educational research and development. A plan that fails to begin with certain critical assumptions appropriate to educational programs and services in the community college is essentially worthless to those who attempt to utilize its guidelines.

This study revealed that the major thrust of research and development activities should be one of analysis of the effectiveness of educational programs and services. One obvious way to look at educational effectiveness is to isolate and identify institutional variables which contribute to a "value-added" dimension of student development--"What did a student gain from attendance at a particular institution?" According to this approach, an educational program that moves

students from the lower quartile of high school achievement to college parallel achievement would be doing well while a college accepting students from the top quartile of high school achievement and maintaining them at that level would be accomplishing less. While it is probably true that this view of educational effectiveness -- a view which assumes that educational institutions are potentially powerful change agents capable of having impact on all who attend -- may be completely naive, the gains seem to outweigh the losses. Cognitive change can be explained in terms of general mental ability, socio-economic status, and other background factors which are brought by students to the college environment but, the effects of college attendance can be quite profound if the conditions are right.

The master plan for educational research and development avoids this dilemma through the use of an input-output model that can be used to measure impact in specific courses and programs of study. This model is designed to answer three questions:

1) What type(s) of impact did the college have on its students?

2) What level of resources (human, financial and space) was necessary to generate these impacts?

3) What level of resources will be necessary in the future to generate similar or expanded levels of impact?

A number of subsidiary questions are also addressed in the model. What kinds of students change in what kinds of ways during the college experience? What kinds of learning arrangements are effective and what are the costs associated with each? What type of management structure is used by the college and how effective is it in attaining institutional goals?

The model responds to these questions through study of many of the dimensions of New York City Community College; student learning and development, faculty characteristics, program development, utilization of learning resources, community demography, administrative decision-making, models for financing, manpower resources, etc. However, until now primary emphasis among academic and administrative divisions in the college has been on evaluation of procedures relevant to institutional functioning, not on outcomes of the educational process. The research model will deal with this problem through continued emphasis on measurement of outcomes in higher education that derive from institutional inputs into the educational process.

On the surface, the model for educational research and development appears to adhere to a typical longitudinal research design which looks at a sample of students at entrance, during the course of their studies, at graduation, and a few years later. This model, however, does not merely account for longitudinal analysis but also is designed to provide cross-sectional studies of the total educational process at

one point in time. In this process, institutional impact is defined through identification and description of chains of evidence that explain how and why impact occurs. Data are collected at entrance that relate to background characteristics of students as well as characteristics of the college and community environment. The process part of the research plan calls for survey and interview checks on student progress in the educational program. Upon termination of enrollment, follow-up procedures are conducted which focus on tangible outcomes (employment, job promotion, four-year college attendance, etc.) of the educational process. The terminal measure of educational effectiveness, then, is empirical research data which indicate the extent to which student needs and objectives have been satisfied as a result of the college experience.

Open-end interviews conducted with personnel in administrative and academic divisions of the college revealed that the most appropriate strategy for implementation of the master plan for research and development is one of the "user consortium". As part of this approach, research data are collected from a number of sources within the institution and tabulated by one central source. The central source has responsibility for determination of data needs and integration of these needs into a research design. A simulation model can then be developed which interprets the impact of various programs and services in the college and projects this impact

into the future. This projection is a measure of the short and long-range resource needs that will be necessary if the college is to maintain its current impact on students and the community. The final sequence in the model is feedback of specific resource projection data to academic and administrative divisions in the college--the need being to develop programs of corrective action that can be used to insure attainment of institutional goals.

An approach of this type to implementation of a program of educational research and development in New York City Community College is not without problems. Many would agree that research in education has been almost meaningless in terms of making the learning process more effective. Up to this time, the emphasis has been on mundane and minute details of the organizational structure of community colleges. When this happens the process of educational development seems to be in reverse. Little is done to identify what is being studied and vital educational processes that make up the college environment are essentially forgotten.

Without research on "impact" in the teaching-learning process, changes in the educational system will most likely continue to be superficial innovations of a mechanical nature. The needed changes are not material. The needs of New York City Community College cannot be met by bigger and better buildings or revamped administrative structures. What, then, is the key? It is suggested that the key is people and func-

tions in the educational system. They make the institution what it is and only they can change it, if changes are actually needed. Since academic and administrative personnel in the college have the power and authority to cause learning as well as the conditions for learning, it seems fruitless to conduct research on educational structures and functions while the personalities, whose value judgments determine the course of action, are unknown quantities.

In this context, several important questions remain to be answered:

1) Can academic and administrative divisions within a complex institution coordinate activities in the implementation of a master plan for educational research and development?

2) Is it possible to channel institutional politics into a role secondary to major developmental needs in an urban community college?

3) Can "routine" tensions that are part and parcel of problem solving research in the community college be productively mobilized through utilization of a consortium approach to educational planning, research, and development?

4) What techniques can be used to eliminate the gap between thought and action that so often plagues research and development operations in the community college?

5) Can meaningful change be brought about through implementation of a research and development program that is based on measurement of "impact" in higher education?

This is a short list of questions that need to be answered prior to the implementation of a comprehensive program of educational research and development in New York City Community

College. Although there are many variations to the structures and functions of creative management in the community college, these questions will help to identify the management purposes of this program for the current institutional structure.

The final observation in this master plan is that certain institutional conflicts seem to result from distorted perceptions and conflicting value orientations within the college and will likely only hinder the achievement of institutional goals. The appropriate means to elimination of this problem is that of subscription to a master plan that maintains as its primary objective the enhancement of institutional goals and creative well-being of the college.

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